ZENITH Pre-Course Content

The Tech Club - Robotics Team

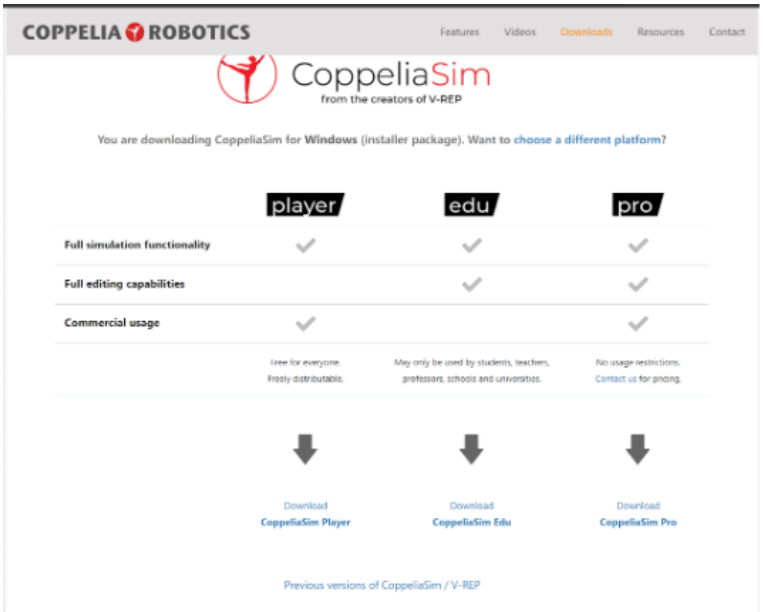
On behalf of the club, I would like to extend a warm welcome to the students who have chosen this course. Follow the instructions given in this document to avoid future hassles over the usage and installation of the software required for the course.

Installation of the following software will be covered below:

- CoppeliaSim
- Python

Installation of CoppeliaSim

The simulator we shall be using throughout this is CoppeliaSim, which is one of the majorly used simulators in the robotics industry. Click the link given above and download the Educational version found on the page.



Click on the downloaded windows installer file to start the installation. Follow

the installation and you can leave the default options selected unless you want it otherwise. Now you can try to open CoppeliaSim by running the application shortcut available on the desktop. If you find that the font and tabs inside the simulator are small and not clearly visible, you can correct this by following the steps given below.

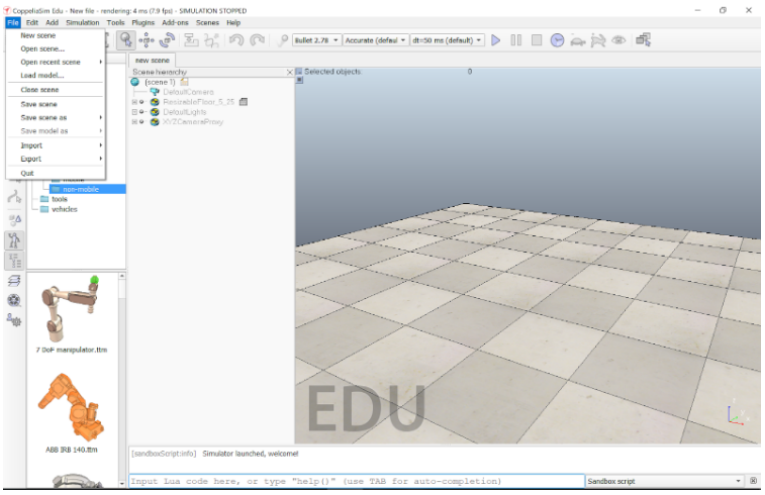
1. Right-click on the CoppeliaSim Application exe
   (probable location: C:\Program Files\CoppeliaRobotics\CoppeliaSimEdu)
   and click Properties.
2. Go under Compatibility Tab
3. Click "Change high DPI settings"
4. Check the box "Override high DPI scaling behavior"
5. Scaling Performed by –> Choose "System"

You can also edit the file "system\usrset.txt" to change the value of the variable "highResDisplay" to 1.
On the Mac, this file is hidden in the directory "coppeliaSim.app" (the application you double-click to execute CoppeliaSim). You can see the contents of this directory using the Terminal utility on your Mac.
In Terminal, use "cd" to navigate to the folder where coppeliaSim.app is, then cd to the directory "Contents/MacOS/system" to see usrset.txt.
Another way to see the contents of the coppeliaSim package on a Mac is to control-click on the coppeliaSim app in Finder, choose "Show Package Contents," and navigate to the MacOS/system directory to see usrset.txt.

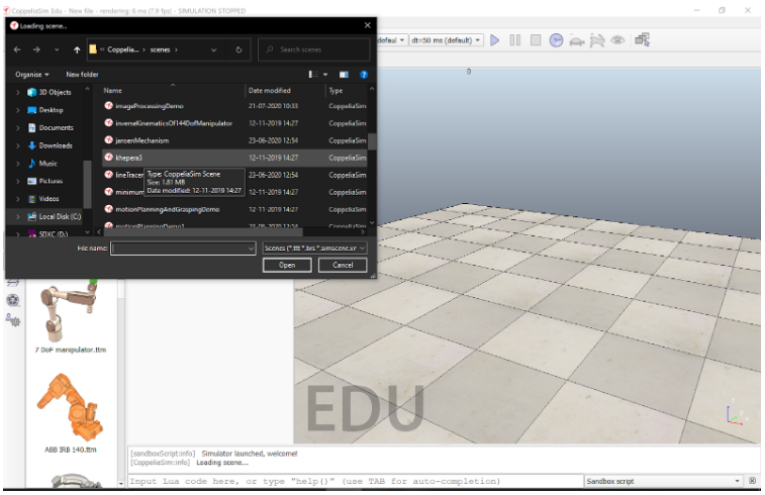
In order to get accustomed to the simulator we suggest that you try to play one of the scenes that were pre-installed with CoppeliaSim.

Testing out CopperliaSim

1. Click Files.
2. Open Scene.

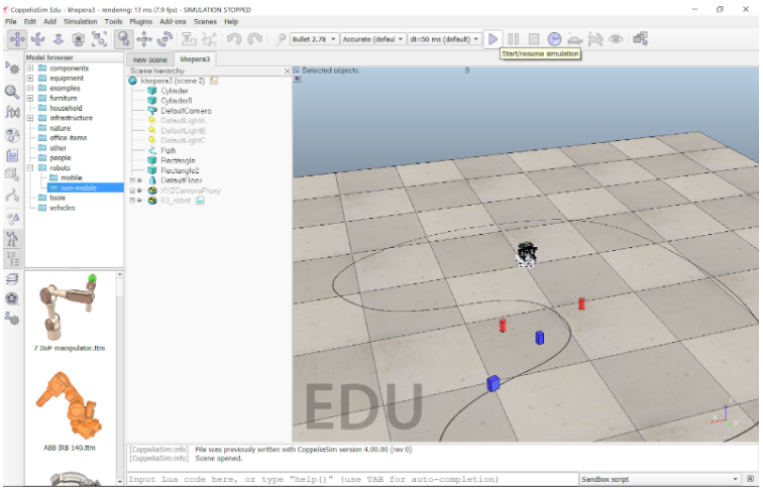


3. Choose Khepera3.



4.Zoom out to view the whole scene by using the scroll wheel.

5. Click the play button to start the simulation.



That wraps up the CoppeliaSim section.

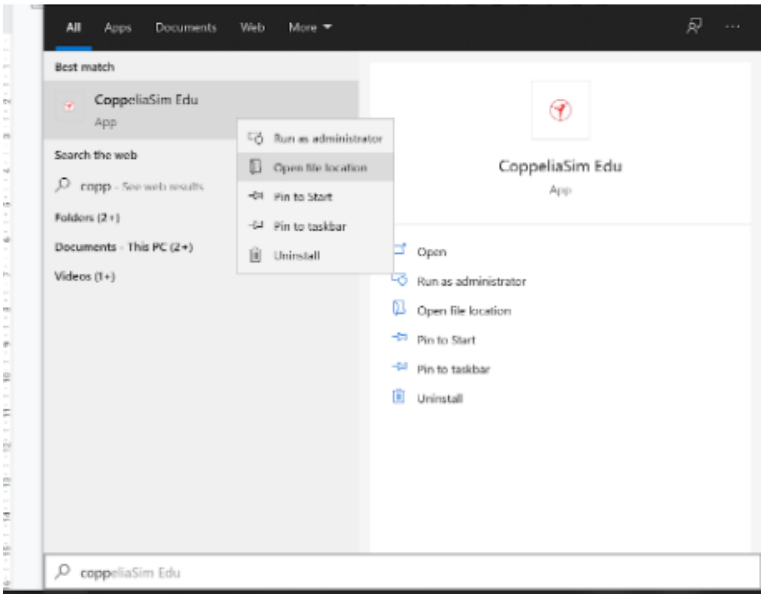
Installation of Python

We shall install anaconda individual edition for this course. Once you have downloaded the installer, run the same.
Follow the default options and complete the installation.

CoppeliaSim API Setup

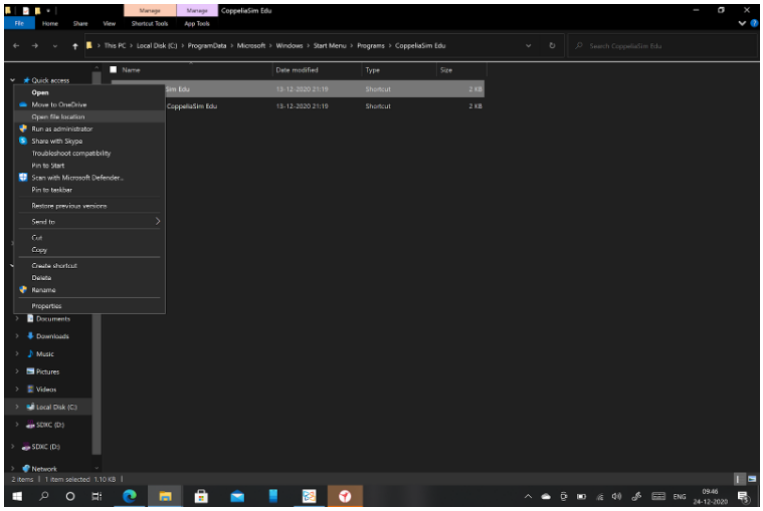
In order to connect python script to the simulator's servers, we shall use the remoteAPI plugins that come with CoppeliaSim.
Navigate to the CoppeliaSim installation folder. You can find this by:

CoppeliaSim -> right click on the result -> open file location



This usually opens the location of the shortcut to the app.

Right click on the shortcut -> open file location.



In the resulting folder look for the programming folder. In programming folder open the the remoteAPIbindings folder. From the python folder within the python folder within remoteAPIbindings, copy the following files.

- sim.py
- simConst.py
- simpleTest.py

We will also have to copy another file. Navigate to the lib folder within the lib folder within remoteApiBindings and copy the .dll file within the corresponding OS folder according to your system.
Paste the copied files in a workspace folder. Now you can create python scripts from this folder and send control signals and read sensor signals for any running simulation scene on CoppeliaSim.

Useful Links

1. CoppeliaSim Installation - video tutorial
2. Installation of Anaconda(Python) on Windows 10 - video tutorial